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EXAMINER

BOYER, RANDY

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/632,501	Applicant(s) BRIGGS, WILMER LEE	
	Examiner RANDY BOYER	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12 and 14-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, and 14-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Examiner acknowledges Applicant's response filed 4 April 2008 containing amendments to the claims and remarks.
2. Claims 1-10, 12, and 14-44 are pending.
3. The previous rejections of claims 1-10, 12, and 14-44 are withdrawn in view of Examiner's reconsideration of the record and discovery of prior art references not previously considered.
4. New grounds for rejection of claims 1-10, 12, and 14-44 under 35 U.S.C. 103(a) are entered. Likewise, new grounds for rejection of claims 4, 5, 18, 19, 25, 29, 32, and 35-39 under 35 U.S.C. 112, second paragraph are entered.
5. Objections are entered with respect to claims 1, 29, and 32. The objections and rejections follow.

Claim Objections

6. Claims 1, 29, and 32 are objected to for lack of antecedent basis in the claims.
7. With respect to claims 1, 29, and 32, the claims recite the limitation "the clay-contaminant adduct." There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.
8. Claim 1 is objected to for lack of antecedent basis in the claim.

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9. With respect to claim 1, the claim recites the limitation “from (d) to (b).” Examiner notes that claim 1 does not recite any process steps labeled (d) or (b). Appropriate correction is required.

10. Claim 32 is objected to for improper ordering of process steps and/or lack of clarity in the claim.

11. Examiner notes that the process steps of claim 32 are labeled non-sequentially, i.e. (a), (e), (f), (b), (c), and (d). The claims should be relabeled to make it clear the proper sequence the process steps are intended to be performed, e.g. by relabeling the process steps sequentially as would be expected (i.e. (a), (b), (c), (d), (e), and (f)). Care should be taken to ensure that the final step of the process recites the correct process steps of the relabeled claim, e.g. “*heating the clay and the clay-contaminant adduct to regenerate the clay material, and providing the regenerated clay material from (f) to (d), wherein the clay is capable of sorbing the source-derived contaminant through at least 300 cycles of regeneration*” (emphasis added). Appropriate correction is required.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 4, 5, 18, 19, 25, 29, 32, and 35-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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14. With respect to claims 4, 5, and 35-39, the claims recite the limitation “a refinery-grade hydrocarbon” or “a refinery-grade material.” Applicant’s specification provides that the process of the instant application may be used “for preparing refinery-grade fuel which meets API and SAE standards” (see e.g., Applicant’s specification, page 6, lines 23-28). However, it is unclear what “standards” in particular Applicant is referring to (e.g., flash point, specific gravity, boiling point, color, viscosity, etc.) and the person having ordinary skill in the art would not be able to readily discern the intended scope of the claims by recitation of “a refinery-grade material” (e.g. must such “refinery-grade material” be saleable as a finished product without further processing?; must such “refinery-grade material” meet certain product specifications such as maximum sulfur and/or nitrogen and/or oxygen content?; etc.). Such being the case, Applicant’s recitation of a “refinery-grade hydrocarbon” or “refinery-grade material” renders the claims indefinite under 35 U.S.C. 112, second paragraph.

15. With respect to claims 18, 19, 29, and 32, the claims recite the limitation “one or more characteristic out of specification for a desired use” or “one or more characteristic requiring adjustment for a desired use.” However, the claims do not further specify what is meant by “characteristic out of specification” (or “characteristic requiring adjustment”) or “desired use” and Applicant’s specification is not sufficiently clear so as to reasonably apprise the person having ordinary skill in the art of the intended scope of the claims. Such being the case, claims 18 and 19 are indefinite under 35 U.S.C. 112, second paragraph.

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16. With respect to claim 25, the claim recites the limitation “one or more off-specification characteristic relating to use in a motor vehicle” and “one or more characteristic for offsetting the one or more off-specification characteristic.” However, the claim does not further specify what “characteristic(s)” or what “specification” Applicant is referring to and Applicant’s disclosure is not sufficiently clear so as to reasonably apprise the person having ordinary skill in the art of the intended scope of the claim. Such being the case, claim 25 is indefinite under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 1-4, 9, 35 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloch (US 3,043,771).

20. With respect to claims 1, 4, 9, 35, and 40, Bloch discloses a process for removing a source-derived contaminant (e.g., sludge) (see Bloch, column 1, lines 10-22) from a hydrocarbon-containing material, comprising: (a) contacting the hydrocarbon-containing material (e.g. a “catalyst complex” derived from hydrocarbon reactions and containing high boiling polymers) (see Bloch, column 1, lines 42-51) with a clay (e.g., fuller’s earth) (see Bloch, column 5, lines 3-8) in a filter apparatus (e.g., an adsorbent column (10)) (see Bloch, Figure 1 with accompanying text), at least a part of the source-derived contaminant being sorbed by the clay (see Bloch, column 2, lines 24-29); (b) removing hydrocarbon-containing material (e.g., a clarified hydrocarbon effluent (19, 20)) from the filter apparatus (see Bloch, Figure 1 with accompanying text), wherein the removed hydrocarbon-containing material comprises a reduced amount of the source-derived contaminant (see Bloch, column 7, lines 36-60) and the process does not include additional or separate steps to remove any contaminant after the contacting step; and (c) heating the clay and clay-contaminant adduct to regenerate the clay material and recycling the regenerated clay material (see Bloch, column 7, lines 55-61).

Bloch does not explicitly disclose wherein the hydrocarbon-containing material and clay are contacted at a temperature in the range of about 50°C to about 180°C, or wherein the clay is capable of sorbing contaminant through at least 300 cycles of regeneration.

However, the contacting step of Bloch is not specifically limited with respect to temperature or number of cyclic regenerations of the clay (see Bloch, entire disclosure). Thus, the contacting may occur at any temperature sufficient to achieve the objectives

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of Bloch. Moreover, Examiner finds Applicant's recitation of a minimum number of cyclic regenerations of the clay is of no patentable consequence in view of Bloch since Bloch discloses the continual regeneration and reuse of the clay adsorbent material (see Bloch, column 7, lines 50-64).

21. With respect to claims 2 and 3, Bloch discloses wherein the source-derived contaminant may be derived from reactions for the polymerization of olefins (see Bloch, column 1, line 25), wherein it may comprise high boiling polymers (see Bloch, column 1, lines 47-51), and wherein it may comprise an inorganic sulfur compound (e.g., a sulfuric acid catalyst sludge) (see Bloch, column 8, lines 65-72).

22. Claims 1-7, 9, 10, 12, and 14-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US 4,208,252) in view of Hutson (US 3,506,409). Alternatively, claims 1-7, 9, 10, 12, and 14-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US 4,208,252) in view of Hutson (US 3,506,409), as evidenced by Bloch (US 3,043,771), Klepfer (US 6,184,427), or Bullock (US 6,184,427).

23. With respect to claims 1-3, 6, 7, 9, 10, 14, 15, and 16, Yoshida discloses a process for removing a source-derived contaminant (e.g., a polymer-derived contaminant such as vinyl chloride) from a hydrocarbon-containing material, comprising: (a) contacting the hydrocarbon-containing material (e.g., material obtained from the thermal decomposition of polymeric materials) (see Yoshida, Abstract; column 2, lines 67-68; and column 3, lines 1-3) with a clay (see Yoshida, column 8, lines 30-41) at a temperature in a range from about 50°C to about 180°C (see Yoshida, column 3, lines 56-67), at least part of the source-derived contaminant being sorbed by the clay (see

Yoshida, column 7, lines 43-46; and column 9, lines 3-25); (b) removing hydrocarbon-containing material, wherein the removed hydrocarbon-containing material comprises a reduced amount of the source-derived contaminant (see Yoshida, column 8, lines 59-68; and column 9, lines 1-25) and the process does not include additional or separate steps to remove any contaminant after the contacting step.

Yoshida does not explicitly disclose wherein the clay and clay-contaminant adduct are heated to regenerate the clay adsorbent material which is then recycled and reused in the contacting step.

However, Yoshida discloses that hydrogen chloride gas generated by the decomposition of vinyl chloride polymers may precipitate as solid metal halide residues (see Yoshida, column 8, lines 59-63) and wherein a residue-separating step may be employed for the removal of such residues (see Yoshida, column 7, lines 43-46; and column 9, lines 3-25). In this regard, Hutson discloses a process for the regeneration of adsorbent clay materials contaminated with metallic halides (see Hutson, column 1, lines 22-28; and column 2, lines 26-32). Hutson explains that the metallic halides can be effectively removed from the adsorbent clay material by flushing with a suitable solvent for the metal halides and heating to an elevated temperature (see Hutson, column 2, lines 56-68; and column 3, line 1), whereby the decontaminated clay adsorbent can then be returned to adsorptive service for the adsorptive removal of additional metallic halides (see Hutson, column 4, lines 22-24).

Therefore, the person having ordinary skill in the art would have been motivated to modify the process of Yoshida so as to include the adsorbent regeneration process of

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Hutson in order to remove the metal halide residues expected to precipitate on the clay adsorbent material in the process of Yoshida during the decomposition of vinyl chloride source material.

Moreover, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the process of Yoshida so as to include the clay adsorbent regeneration process of Hutson because: (1) both Yoshida and Hutson are directed to the use of clay adsorbents for the removal of metal halides; and (2) Yoshida explicitly suggests use of a "residue-separating step" (e.g. the regeneration process of Hutson) to remove precipitated metal halides from the spent clay adsorbent.

Finally, Examiner notes that Applicant's recitation of a minimum number of cyclic regenerations of the clay is of no patentable consequence in view of Hutson since Hutson discloses the continual regeneration and reuse of the clay adsorbent material (see Hutson, column 3, lines 8-13; and column 4, lines 22-24).

24. With respect to claims 4 and 5, Yoshida discloses wherein the removed hydrocarbon-containing material may be fractionated into uniform grade hydrocarbons (see Yoshida, column 3, lines 9-13).

25. With respect to claim 8, organic material such as animal offal and crop/plant residuals are art-recognized equivalent starting materials for the conversion of waste organics (such as the waste plastics of Yoshida's process) into higher grade hydrocarbon materials (see e.g., Klepfer (US 6,184,427), Abstract; and Example VI (disclosing plastic and cellulosic starting material); and Bullock (US 6,653,517),

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Abstract; and column 4, lines 1-20 (disclosing dead animals, waste plastics, and other bio-wastes as starting materials)).

26. With respect to claims 12, 26, 30, and 33, Hutson discloses wherein the clay material and clay-contaminant adduct are heated to a temperature of 375°F (about 190°C). Examiner submits that the person having ordinary skill in the art would readily recognize that heating the clay and clay-contaminant adduct to a temperature of at least 190°C would be effective to regenerate the clay material. Thus, Examiner finds Applicant's claim 12 to be unpatentable in view of Yoshida and Hutson.

27. With respect to claim 17, Yoshida discloses wherein the polymeric material is thermally decomposed at a temperature from about 300°C to about 500°C (see Yoshida, column 3, lines 60-68).

28. With respect to claims 18-24, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g. motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Thus, Examiner finds Applicant's claims 18-24 unpatentable in view of the teachings of Yoshida.

29. With respect to claim 25, 28, and 37, see discussion *supra* at paragraph 23. Moreover, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g., motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Thus, Examiner finds Applicant's claims 25, 28, and 37 unpatentable in view of the teachings of Yoshida.

30. With respect to claims 27, 31, and 34, Yoshida discloses wherein his process can be carried out continuously (see Yoshida, column 1, lines 64-68; and column 2, lines 1-2).

31. With respect to claims 32, 35, 36, 38, and 39, see discussion *supra* at paragraph 23. Moreover, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g., motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Finally, Examiner notes

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that a close reading of Yoshida discloses that the post-separation fractionation step to produce uniform liquid products is optional and not a required feature of Yoshida's process (see Yoshida, column 3, lines 9-13) (noting that fractionation to obtain uniform components is only necessary when liquid products having more uniform properties are to be obtained). Thus, Examiner finds Applicant's claims 32, 35, 36, 38, and 39 unpatentable in view of the teachings of Yoshida.

32. With respect to claims 40-44, Yoshida (in one aspect of his invention) is drawn to generally to a process for the treatment and conversion of plastic wastes into liquid hydrocarbon products, and as such is not specifically limited with respect to the apparatus for conducting such process. Moreover, Examiner notes that contacting and separating of a contaminated hydrocarbon material with clay adsorbent in a single adsorbent treatment column is generally known in the art, as evidenced by Bloch (US 3,043,771).

Response to Arguments

33. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-

7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

/Glenn A Caldarola/

Acting SPE of Art Unit 1797